I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV743885952US, in an envelope addressed to: MS RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: July 11, 2006 Signature: (Germaine Sarda)

Docket No.: 564462001811
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Jay M. SHORT

Application No.: 10/034,985 Confirmation No.: 9024

Filed: December 21, 2001 Art Unit: 1652

For: RECOMBINANT BACTERIAL PHYTASES AND USES THEREOF Examiner: Delia M. Ramirez, Ph.D.

MS RCE
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.132

Sir:

1. I, Nelson Barton, Ph.D., am Director for Product Development at DIVERSA CORPORATION, San Diego, CA, the exclusive owner (assignee) of the above-identified patent application.

2. I am an expert in the field of enzyme and feed development. My resume is attached as documentation of my credentials. Additionally, I have been involved in establishing and managing collaborations with food and feed enzyme companies, including Danisco A/S, amongst others.

3. I have read the specification and the file history for the above-referenced patent application and I understand the obviousness-based issues presented by the USPTO in the outstanding office action.

4. I believe that at the time of the invention there was a long-felt need in the food, agricultural feed and biotech industry for an invention such as that set forth in the pending claims, i.e., an invention comprising use of an *E. coli* phytase in a food or a feed. This long-felt need is evidenced by the commercial success of Diversa Corporation's Phyzyme® *E. coli* phytase feed enzyme. Diversa Corporation was the first entity to make and market an *E. coli* phytase feed enzyme (in collaboration with its exclusive licensee).

5. Use of an *E. coli* phytase is at least in part responsible for the commercial success of the claimed feed and food supplement. This invention was the first to realize that because *E. coli* phytases have unique properties that distinguish them from phytases from other organisms, including other bacteria, they would be a better phytase enzyme to use in a food or feed.

6. For example, this invention was the first to realize that because *E. coli* phytases have higher specific activity than phytases from other organisms they would be a better phytase enzyme to use in a food or feed. While it was known in the art at the time of the invention that *E. coli* phytases have higher specific activity than phytases from other organisms, including other bacteria, it was this invention that for the first time realized and exploited this higher specific activity property and used an *E. coli* phytase in a food or feed.

7. Additionally, this invention was the first to realize that because *E. coli* phytases operate at a relatively acidic pH of between about pH of 4.5 to 5.5, and have a better activity in this pH range than phytases from other organisms, including other bacteria, they would be a better phytase enzyme to use in a food or feed (because the stomach environment is one of low pH, enzymes that maintain high activity in acidic conditions can be a preferred choice for use in a food or feed). While it was known in the art at the time of the invention that *E. coli* phytases operate at a relatively

acidic pHs, it was this invention that for the first time realized and exploited this low pH (acidic) activity profile and used an *E. coli* phytase in a food or feed.

8. Furthermore, this invention was the first to realize that because *E. coli* phytases are substrate specific and are very active on phytate and not as active on other phosphate-containing compounds, they would be a better phytase enzyme to use in a food or feed. While it was known in the art at the time of the invention that *E. coli* phytases operate at a relatively acidic pHs, it was this invention that for the first time realized and exploited this substrate activity profile and used an *E. coli* phytase in a food or feed.

9. After the priority date of this application, other food and feed enzyme companies realized the value of this discovery and began to investigate the use *E. coli* phytases in feeds.

10. In summary, it was this invention that for the first time used an *E. coli* phytase in a food or feed to result in a better phytase enzyme-supplemented product, for which there was a long-felt need at the time of the invention.

I hereby declare that all statement made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully Submitted

Date: July 10, 2006

Nelson Barton

NELSON R. BARTON

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEARS	FIELD OF STUDY
University of California Berkeley	B.A.	1980-1984	Molecular Biology
University of Miami Sch of Medicine	Ph.D.	1985-1990	Cellular & Molec. Biology
Harvard University	Postdoctoral	1990-1993	Biochemistry & Genetics
University of California San Diego, HHMI	Postdoctoral	1994-1996	Biochemistry & Genetics

Research and Professional Experience

11/1990 – 12/1993 Postdoctoral Fellow, Harvard University, Department of Cell & Developmental Biology. Under direction of Dr. Lawrence Goldstein. Biochemical characterization of microtubule-associated motor proteins involved in chromosome segregation.

1/1994 – 4/1996 Howard Hughes Fellow in the laboratory of Dr. Lawrence Goldstein, Howard Hughes Medical Institute, Div. Of Cellular and Molecular Medicine, Dept. Pharmacology, University of California, San Diego. Biochemical characterization of microtubule-associated motor proteins involved in chromosome segregation.

4/1996 – 05/2000 Manager, Biologicals, R&D, Calbiochem Corporation, San Diego, CA
Developed line of recombinant glycosyltransferases for enzymatic synthesis of oligosaccharides.

5/2000 – 12/2002 Sr. Staff Scientist, Diversa Corporation, San Diego, CA.

1/2003-Present Principal Scientist, Diversa Corporation, San Diego, CA
Currently developing high-throughput screening methods for the discovery and optimization of novel enzymes and biomaterials for use in agriculture, chemical processing, industrial and pharmaceutical applications.

Selected Publications

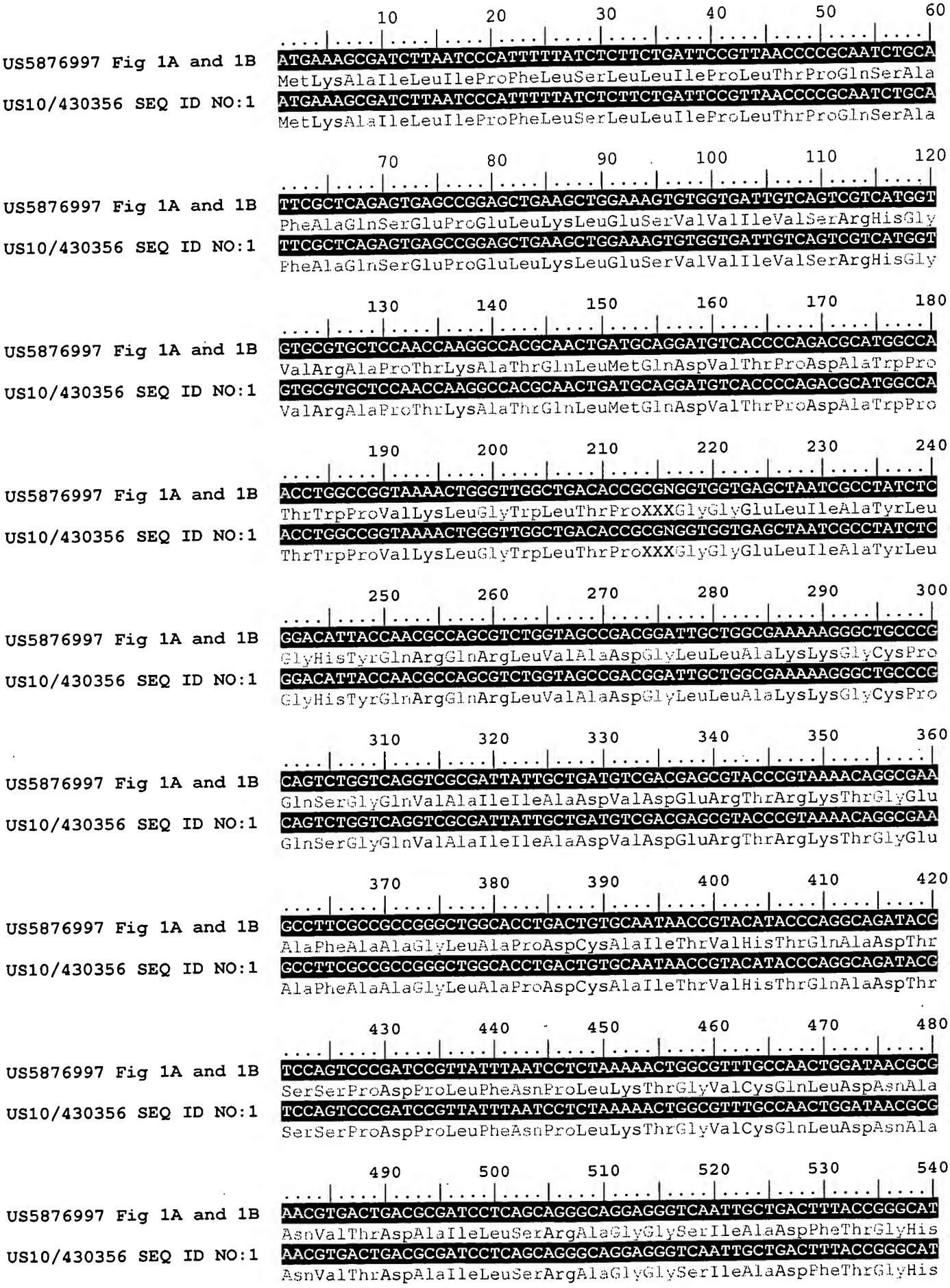
1. Afshar, K., **N.R. Barton**, R.S. Hawley, and L.S.B. Goldstein (1995). DNA binding and meiotic spindle localization of *Drosophila* NOD kinesin-like protein. Cell 81, 129-138.

2. **Barton, N.R.**, A.J. Pereira, and L.S.B. Goldstein (1995). Motor activity and mitotic spindle localization of the *Drosophila* kinesin-like protein KLP61F. Molec. Biol. Cell 6, 1563-1574

3. **Barton, N.R.** and L.S.B. Goldstein (1996). Going mobile: microtubule motors and chromosome segregation. Proc. Natl. Acad. Sci. (USA) 93, 1735-1742.

4. Ciofalo, V., **N.Barton**, K. Kretz, J. Baird, M. Cook, D. Shanahan (2003). Safety evaluation of a phytase, expressed in *Schizosaccharomyces pombe*, intended for use in animal feed. Reg. Tox. Pharm. 37, 286-292.

5. Garrett, J.B., K.A. Kretz, E. O'Donoghue, J. Kerovuo, W. Kim, **N.R. Barton**, G.P. Hazlewood, J.M. Short, D.E. Robertson, K.A. Gray (2004). Enhancing the thermal tolerance and gastric performance of a microbial phytase for use as a phosphate-mobilizing monogastric feed supplement. Appl. Environ. Microbiol. 70, 3041-3046.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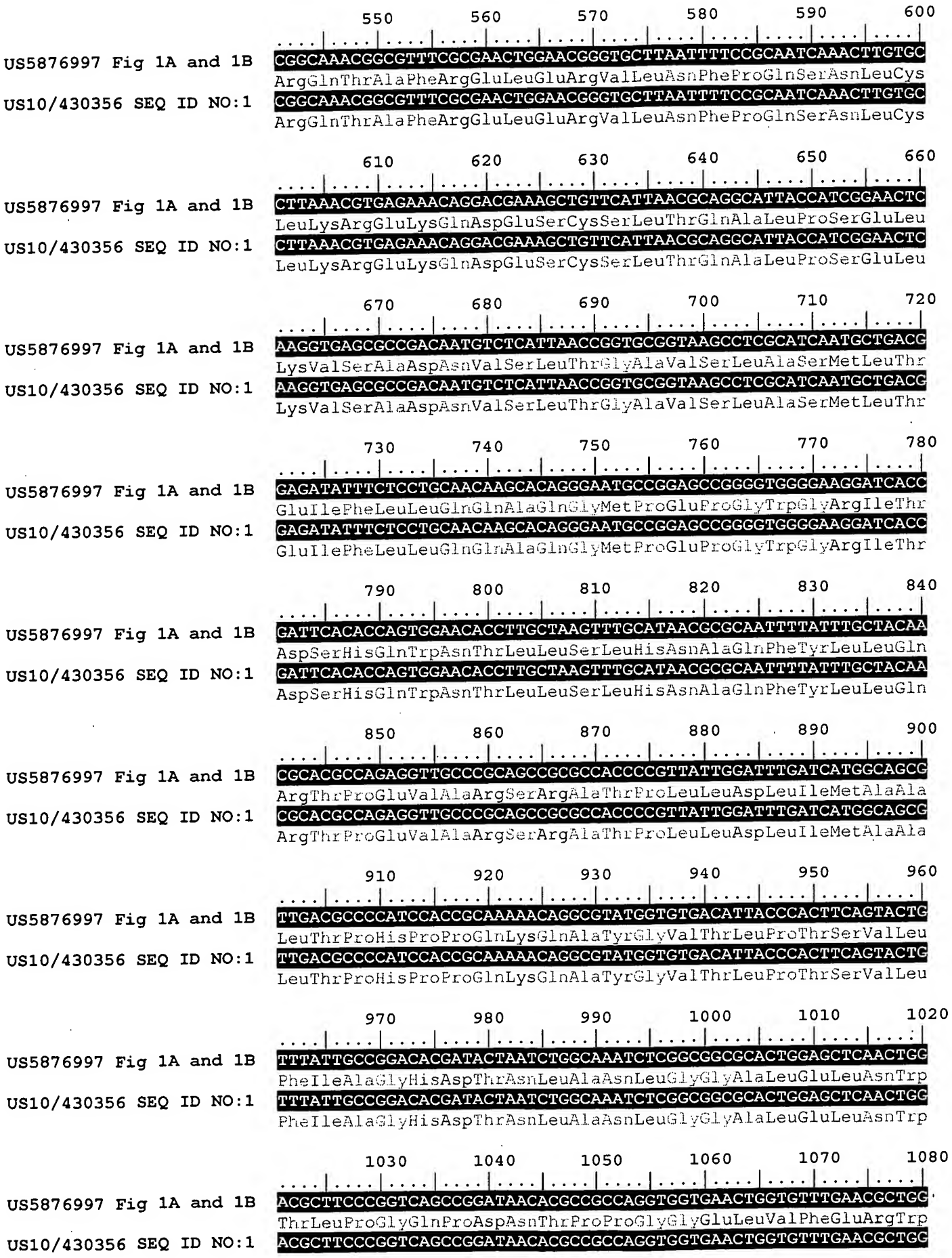
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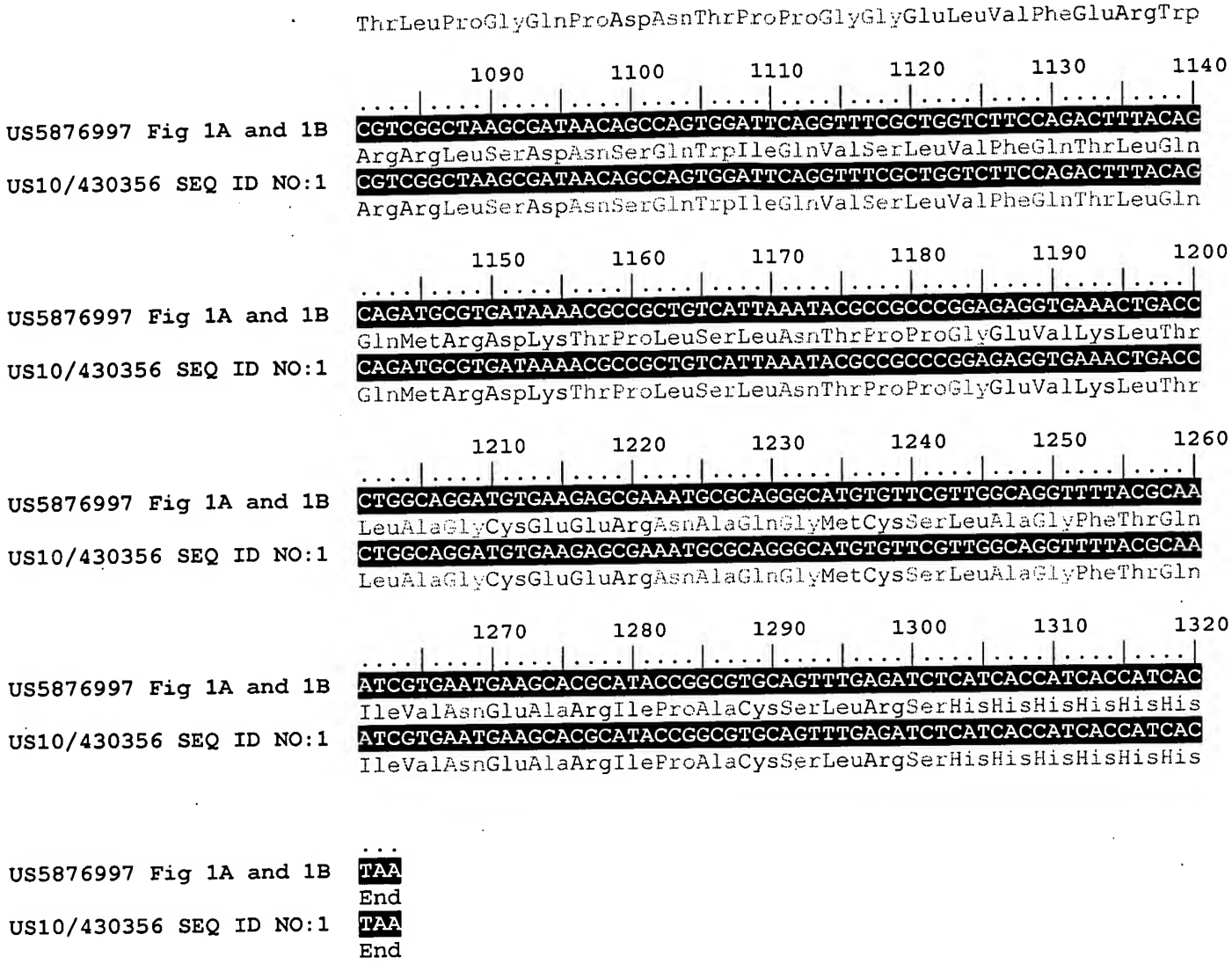
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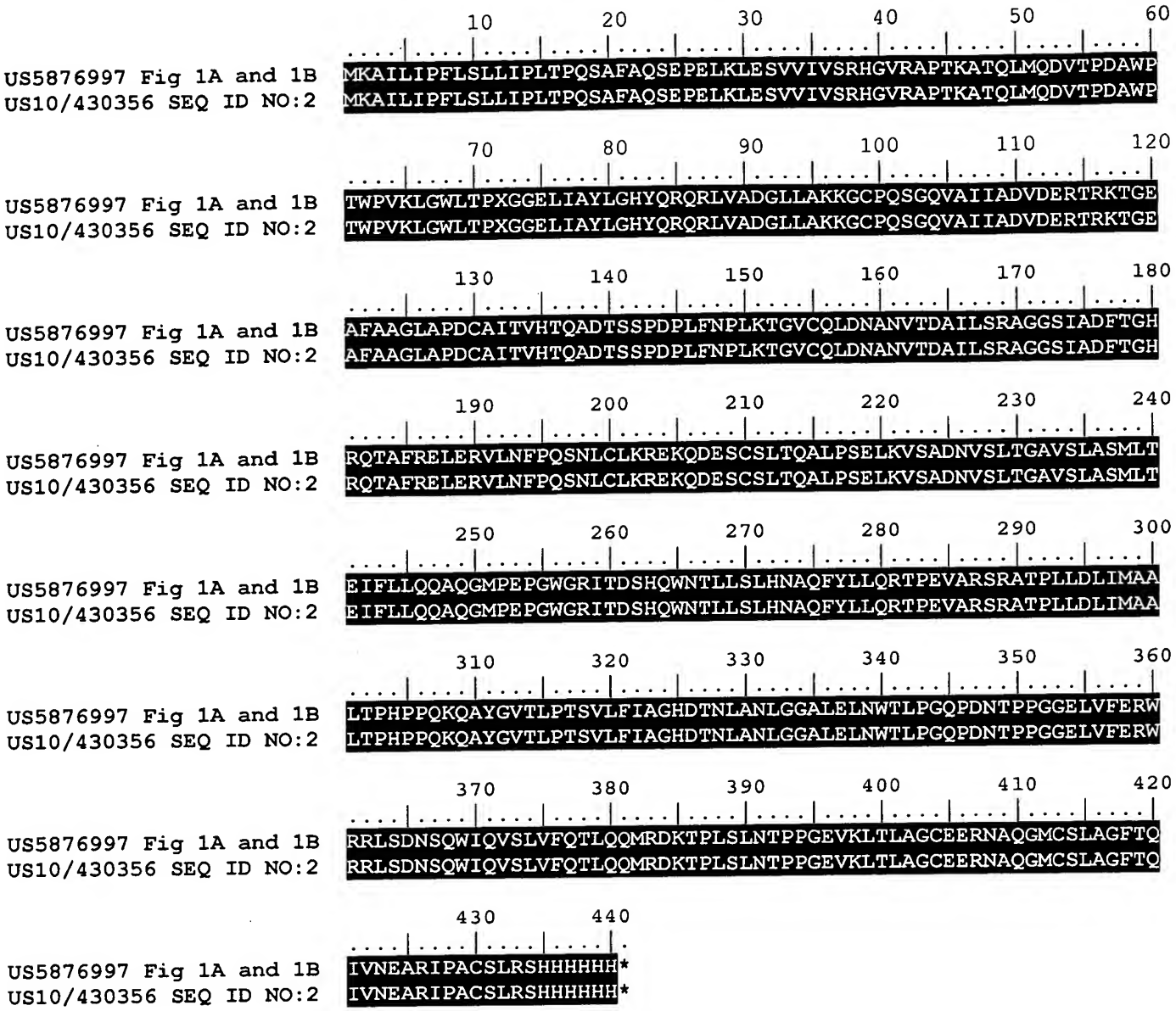
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